

Description

5 Disaster and emergency mode for mobile telephones

The invention relates to methods and devices for controlling the establishment of connections to mobile stations present in an area hit by a disaster.

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In a disaster experience has shown that mobile radio networks in the area hit by the disaster are frequently overloaded, as users of many mobile stations present in this area try to make emergency calls.

15 It is known from WO 94/28687 A1 that the same message (for example relating to the disaster) can be transmitted simultaneously to all mobile stations in an area hit by a disaster by broadcast from an alarm center, for which purpose the mobile stations in the area in question can be switched to inactive with the effect that ongoing
20 calls are interrupted and new calls cannot be made.

The object of the present invention is to allow mobile stations to establish a connection with the most effective regulation possible avoiding overloading of the voice connection channels present in an
25 area hit by a disaster. The object is achieved in each instance by the subject matter of the independent Claims.

Since according to the invention a sequence is transmitted by means of a cell broadcast (e.g. SMS-CB in GSM, etc.) to all mobile
30 stations in at least one cell in the area in question, by means of which sequence a mobile station can request the establishment of a connection (in particular a voice connection) to a destination address, it is possible to control the establishment of connections

to the mobile stations in the area whilst avoiding network overload. The cell broadcast can be in the form of a short message for example. Alternatively or additionally it is also possible to inform all the mobile stations present in the area ergonomically about the circumstances of the disaster via a circuit switched group call function (line-based transmission of voice information to all mobile stations in the group in at least one cell).

In particular it is possible to control the mobile stations (mobile telephones) by activating their SIM application toolkit function (if this exists in the SIM card of the mobile station), to control the mobile stations efficiently so that for example they themselves cannot activate calls or can only activate calls to predefined numbers and/or that they communicate a mobile radio terminal number or mobile radio subscriber ID card number to an emergency center (the address of which can for example be transmitted beforehand with the ID).

According to one embodiment of the invention mobile stations are enabled during a disaster to call a number provided for this purposes as destination, which telephone number can for example be made up of the sequence and the mobile station device number, to allow identification of the individual mobile radio terminal during the call in an efficient manner.

In order to detect all subscribers in the disaster area in an efficient manner, the mobile stations can be prompted to transmit their mobile radio terminal number (IMEI) and/or the mobile radio subscriber ID card number (IMSI/MSISDN) of data representing the

mobile radio subscriber ID card (SIM) contained in the mobile station to a predefined telephone number (e.g. by SMS, CLIP, etc.).

Further features and advantages of the invention will emerge from the further Claims and the description below of an exemplary embodiment with reference to the drawing, in which:

Figure 1 shows a schematic illustration of the control of the establishment of connections from mobile stations present in an area hit by a disaster.

Figure 1 shows an alarm center 1, which in a disaster prompts a switching device (MSC) 2 to transmit a cell broadcast (by SMS, etc.) via a mobile radio network indicated by a base station 3 to all mobile stations 5, 6 in at least one mobile radio cell of a mobile radio network 3, 7, 8 in the area 7, 8 hit by the disaster, which message 4 prompts the mobile stations 5, 6 to request the establishment of a connection (wanted by the user of the mobile station or serving to identify all the mobile stations present in the area 7, 8) in future by specifying the sequence (as an SMS or part of a telephone number to be called) in a request (8).

The sequence can for example be any numerical number or letter sequence, etc. When transmitting a sequence 4, details of the disaster can also be transmitted to mobile radio terminals 5, 6 as text (SMS, etc.) or a voice message, etc.

In the case of a request 8 (by a mobile station 6) for establishment of a call via the mobile radio network 3 to a switching device (2, 9), where the call establishment request 8 does not contain the sequence (4) (and cannot subsequently transmit it), establishment of a call is rejected by the switching

device 2, 9, to prevent overloading of the mobile radio network during the disaster by controlling connection establishment 8 in this way. In the case of a request 8 to establish a call from a mobile station 6 via the mobile radio network 3 to a switching device (2, 9), where the call establishment request 8 contains the sequence (4) (or can transmit it subsequently), the switching device 2, 9 establishes the call. Expediently however the connection is only established, if the called destination (telephone number, etc.) is also a destination (e.g. known to the switching device or previously communicated by an emergency center).

A mobile station 6 tries for example after communication of the sequence 4 to establish a connection (in particular a voice connection) to a destination (e.g. an operator telephone number of an alarm center (1)), by calling a telephone number made up for this purpose of the (previously communicated) sequence 4 and in some instances data in its MSISDN, whereby a switching device 9 in the MSC 2 ascertains that the sequence 4 was transmitted as authorization data (giving entitlement to a call) in this telephone number, whereupon the mobile station 6 is switched through to the called destination (operator, etc.) in the alarm center 1. Alternatively or additionally, (for example via a SIM application toolkit of a mobile station) transmission of the sequence 4 (as proof of entitlement) can also prompt the mobile stations 6 independently to establish a voice connection or send a text message, which transmits identification of the mobile station 6 and/or data enabling the sequence 4 (for example the mobile station terminal number IMEI, a mobile radio subscriber ID card number of a SIM in the mobile station 6 etc.)

When the disaster is over, the mobile stations MS 5, 6 and switching devices MSC can be returned to normal status by a message

specifically for this purpose, so that the mobile stations can again call any destination without transmitting a sequence and the switching devices can switch these through again without verifying a sequence.